

Abstract Submitted
for the APR06 Meeting of
The American Physical Society

Characteristics of impurity production and transport in ITER edge plasmas¹ T.D. ROGNLIEN, R.H. BULMER, M.E. RENSINK, LLNL, J.N. BROOKS, ANL — The mixed-material (C, W, Be) aspect to the ITER wall makes it especially important to model to determine the intermixing of materials owing to spatial transport and redeposition of sputtering materials. Here the 2D UEDGE transport code includes both lower and (more remote) upper X-points to model the edge plasma with the possible existence of strong convective radial transport. The charge-exchange neutral hydrogen flux to the wall is assessed with the DEGAS 2 Monte Carlo neutral code. The impurity level in the edge plasma and the spatially dependent redeposition fluxes of different impurities are modeled from the multi-component fluid model using approximate sputtering rates. The fluid results are also compared to the WBC ion Monte Carlo code. The WBC model includes a more detailed sputtering model and kinetic effects that can be important in the low density and near-surface regions.

¹Work performed under the auspices of USDOE by UC LLNL contract No. W-7405-ENG-48, and also for USDOE by ANL.

T.D. Rognlien
LLNL

Date submitted: 13 Jan 2006

Electronic form version 1.4